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Notes on a Few Wyoming Dragonflies.

(ORDER ODONATA.)

By E. B. WILLIAMSON.

According to Banks' *Catalogue* one species of Odonata, *Libellula quadrimaculata* Linné, has been reported for Wyoming. Thirteen other species have been recorded for the Yellowstone. From July 19 till August 6, 1899, the writer, a member of the Wyoming Fossil Fields Expedition, observed the species considered below. Others were seen but not taken. Doubtless Wyoming will be found to be less favored odonatologically than many of the other States; the number of species to be recorded will be small when compared with the number now known to live in New York, Pennsylvania, Georgia, Ohio, and other localities.

1. *Lestes unguiculatus* Hagen.

Laramie, July 19; Medicine Bow, July 20; Sheep Creek, Albany Co., July 23; Little Medicine, Carbon Co., July 30. A common species at all points. The males have the superior appendages at base dorsally and externally more or less pale yellow.

2. **Lestes uncatus** Kirby.

Laramie, July 19; Medicine Bow, July 20; Sheep Creek, Albany Co., July 23; Little Medicine, Carbon Co., July 30. Both sexes taken at all points where the species was observed.

3. **Amphiagrion saucium** Burm.

Sheep Creek, Albany Co., July 23, taken along a small tributary, 3 ♂ 1 ♀. Laramie, July 19, two ♀. Abdomen ♂ 19, ♀ 19-21; hindwing ♂ 15, ♀ 15-18 mm.

These Wyoming specimens have certain differences from the typical form—robustness, darker colors and villose thorax—which are more marked than in any other individuals examined, even from Montana and Washington. The form of the male appendages will not serve to separate them; a female from Washington is indistinguishable from a Wyoming specimen. Judging from my material the variation seems to run from the typical Eastern *saucium* to specimens from Washington, then Montana, and finally the Wyoming forms. These last agree so well with *Pyrrhosoma abbreviatum* Selys, that his name must be considered a synonym of *saucium*.*

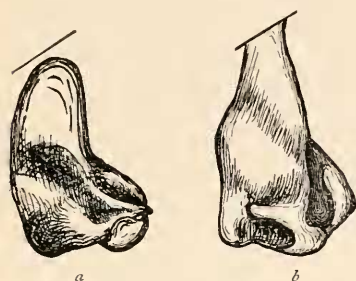
4. **Enallagma annexum** Hagen. (Pl. IX, figs. 3, 7).

Medicine Bow, July 20; Sheep Creek, Albany Co., July 23 and August 6.

When these notes were prepared I had not separated this species from the next, including both under the name *calverti*. I have since been able to distinguish the two by the aid of a drawing of the abdominal appendages of the male in profile of each species, which Dr. Calvert sent me, together with a specimen of each species, *annexum* from Seattle, Washington, June 14, 1894, and *calverti* from Olympia, Washington, July 9, 1893. When sending this material Dr. Calvert raised the question of the distinctness of *annexum* and *calverti*. So far as the Wyoming material goes there seem to be no intermediate forms. A single male of *annexum* from Pasadena, California, July 7, 1899, does not differ from Wyoming specimens of the same species. Between the two species no color differences are

* I have studied some of these Wyoming specimens, as well as those from Montana, Washington, and also Colorado, and hold the same opinion as to the specific identity of *abbreviatum* and *saucium*.—P. P. Calvert.

discernible, and the description of *E. calverti* female, as given below, will serve as well for the female of *annexum*. The amount of black on abdominal segment 10 of the males varies considerably in both species. The extent of black on the



Left superior abdominal appendage of (a) *E. annexum* ♂, Sheep Creek, Aug. 6, 1899, and (b) *E. calverti* ♂, same place and date. Both are interno-latero-dorsal views.

abdominal appendages seems to depend on age. Teneral individuals of *annexum* have the appendages entirely pale, excepting the tip of the lower branch of the superiors and the tip of the inferiors. Older individuals have the appendages entirely black, excepting the base and lower part of the inferiors. In profile the outline of the superiors is often

suggestive of *E. geminatum* Kellicott or *E. divigans* Selys. *Annexum* was the most abundant *Euallagma* observed.

5. ***Euallagma calverti*** Morse. (Pl. IX, figs. 5, 9, 10).

Ab. ♂ 23-26, ♀ 24-26; h. w. ♂ 19-21, ♀ 20.

Medicine Bow, July 20; Sheep Creek, Albany Co., July 23 and August 6. Several pairs were taken and in every case the female was greenish in color. Bright blue males were taken singly. They are older and possibly spent individuals. This applies as well to *annexum*.

♀.—Greenish or bright blue; head and thorax marked with black, as in the male; posterior border of prothorax rounded, entire. First abdominal segment black at base; dorsum of 2-10 black, pale as follows: basal rings on 3-7, interrupted on 3 by the narrowed dorsal stripe, 8 entirely pale, excepting a median cordate spot, point anterior, or this spot may extend backward to the apex and on to the sides of the segment, the point being produced anteriorly to the base; the black dorsal stripe narrows gradually on 9 and 10 to the apex of 10.

6. ***Euallagma civile*** Hagen.

Sheep Creek, Albany Co., July 23, 2 ♂ ♂.

7. ***Euallagma anna*** n. sp. (Pl. IX, figs. 1, 2).

Ab. ♂ 26, ♀ 25; h. w. ♂ 20, ♀ 21.

♂ Head yellowish below; above blue; vertex and frons above black; first joint of antennæ blue; postocular spots connected; rear of head

pale bluish. Prothorax black, blue as follows; a transverse stripe covering the anterior half of the first lobe, a cuneiform spot on either side and the sides of the middle lobe, and narrowly on the posterior border, which is entire, flattened above. Thorax with the following black: a mid-dorsal stripe, a humeral stripe, wider below, and a line on the upper third or fourth of the second suture. Abdomen with the following black: base of 1; an orbicular apical spot and a very narrow apical ring on 2; the dorsal spot and apical ring on each of 3-7 connected; dorsum of 3 with the apical half or third; 4 with the apical half or three-fifths, narrowed anteriorly; 5 with the apical three-fifths or two-thirds, narrowed anteriorly, but wider than the corresponding part of 4; 6 with the apical two-thirds or three-fourths, but little narrowed anteriorly; 7 entirely, excepting a blue basal ring, the black of uniform width; 10 entirely. Legs pale bluish, femora with a black line on the dorsal surface, tibiae with a black line on the anterior surface. Pterostigma black; 3 antenodal cells. Superior appendages in profile about as long as 10, bifid, the lower branch short, extending posteriorly scarcely one-third the length of the appendage, its apex directed ventrally, internally and slightly anteriorly; the upper branch is cylindrical, little curved till in the apical third, which turns inward and downward; between the two branches on the inner surface is a pale tubercle which extends posteriorly beyond the lower branch. Inferiors about three-fifths as long as the superiors, directed upward and inward.

♀. Head and thorax similar to the male; mid-dorsal thoracic carina pale; posterior border of the prothorax with a low median elevation and a smaller one on either side; the lateral elevations are black, continuous with the black of the middle lobe, the remainder of the border pale. Abdomen with dorsum of 2-10 black, 10 very narrowly; sides and basal rings yellow or greenish.

Sheep Creek, Albany Co., July 23, 1899, 8 ♂♂, 3 ♀♀. Named for Miss Anna Tribolet.

Mr. Hine writes me that specimens of this species, from Arizona, are in the Kellicott Collection under the name *prævarum*. In a specimen of *prævarum* from Mexico, collected by Mr. and Mrs. Deam (Pl. IX, figs. 4, 6), there is no pale tubercle, the appendages are shorter and less conspicuous, the lower branch of the superiors is wider and longer, with the apex directed posteriorly, and not at all anteriorly, as in *anna*; the inferiors are slenderer and, when compared with the superiors, relatively longer. Dr. Calvert says that the differences here indicated between *prævarum* and *anna* are shown by a comparison of a type of *prævarum* and specimens of the Wyoming species which I sent him. Moreover, specimens

from New Mexico differ from *prævarum* in another direction. *Anna* stands between *civile* and *prævarum*. From *civile* it may be recognized at once by the reduced tubercle and lower branch of the superiors.

8. **Ophiogomphus severus** Hagen.

At Medicine Bow this species was transforming by dozens along the banks of the Medicine Bow River. The species was also very common, both as teneral and as fully matured individuals, along Sheep Creek. In the male the two branches of the inferior abdominal appendage are pressed together in their apical half.

Medicine Bow, July 20; Sheep Creek, Albany Co., July 23.

9. **Somatochlora elongata** Scud., var. *minor* Calvert. (Pl. IX, figs. 11, 11 a).

Ab. ♂ 32 mm.; h. w. ♂ 34; pter. 2.75 (2.—2.15 in the types).

Sheep Creek, Albany Co., Aug. 6, 2 ♂ ♂. One of these was compared by Dr. Calvert with his types and identified in this way. The following differences from his original description (Ent. News, IX, p. 87, April, 1898) may be noted:

♂. Postclypeus (*nasus*) and vertex black; mesepimeron and metepimeron each with a median oblong yellow or whitish spot.

10. **Libellula quadrimaculata** Linné.

Laramie, July 19, one ♀.

11. **Sympetrum rubicundulum** Say.

Laramie, July 19; Medicine Bow, July 20; Sheep Creek, Albany Co., July 23 and August 6; Little Medicine, Carbon Co., July 30. A very abundant species wherever observed.

12. **Sympetrum scoticum** Donovan. (Pl. IX, figs. 12, 14).

Ab. ♂ 22, ♀ 21; h. w. ♂, ♀ 25.

♂. Labium yellow with a median black stripe; labrum dark brown; clypeus and frons green; the frons above and extending on to the front more or less tinged with brown, black before the vesicle extending to and a short distance around the eyes in front; vesicle and occiput reddish brown; rear of head yellow, each side with three black spots or lines. First two lobes of the prothorax marked with bright yellow and black; hind lobe orange, deeply bilobed. Thorax heavily clothed with white or yellowish tinged pile; above bright yellowish brown extending

to the humeral suture, which is broadly black, interrupted at the middle; sides of thorax bright yellow with black stripes, varying greatly in different individuals. The male figured has the black markings more developed than has any of the other three specimens taken. Abdomen yellowish or reddish, obscure markings above on 1-3 and posteriorly; 9 with a mid-dorsal black spot; 2 with a lateral black spot; an inferior lateral stripe on 3-10. Coxæ and trochanters yellow; legs black. Wings hyaline, pterostigma brown, paler ventrally.

♂. Similar; frons without brown or with less than in the male. Abdominal segments 8 and 9 narrowly black above. Wings orange at base, the color scarcely or not reaching the first antecubital.

Sheep Creek, Albany Co., August 6, 2 ♂♂, 2 ♀♀. One of the males has two cross nervures in the lower basal cell of all four wings. Dr. Calvert has examined a specimen of each sex, and I am indebted to him for the identification of the species.

13. *Sympetrum madidum* Hagen. (Pl. IX, fig. 13).

Ab. ♂ 26; h. w. ♂ 28.

Sheep Creek, Albany Co., July 23.

14. *Sympetrum corruptum* Hagen.

Little Medicine, Carbon Co., July 30, one ♀.

EXPLANATION OF PLATE.

Figs. 1, 2. *Enallagma anna* n. sp., male abdominal appendages, 1 dorsal, 2 profile view. Sheep Creek, July 23.

Figs. 3, 7. *E. annexum* Hagen, id., profiles. Sheep Creek. 3 July 23, 7 August 6.

Figs. 4, 6. *E. prævarum* Hagen, id., 4 dorsal view, 6 profile. Queretaro, Mex., 5900 feet, Dec. 12, 1898.

Figs. 5, 9, 10. *E. Calverti* Morse, id., 5 dorsal view, 9, 10 profiles. Sheep Creek, August 6.

Figs. 8, 12, 14. *Sympetrum scoticum* Donov., male, 8 profile of abdominal appendages, 12 color pattern of right side of thorax, 14 profile of genitalia, also hamule seen from in front. Sheep Creek, August 6.

Fig. 11. *Somatochlora elongata* Scud. var. *minor* Calvert, male, profile of abdominal appendages, showing also the tip of the left superior appendage; 11a ventral view of inferior appendage. Sheep Creek, August 6.

Fig. 13. *Sympetrum madidum* Hag., male, genitalia seen obliquely from beneath and in front. Sheep Creek, July 23.